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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,885	04/12/2001	Naoki Tsukiji	199894US-8	1390

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EXAMINER
MONDT, JOHANNES P

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 09/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/832,885	TSUKIJI ET AL.	
	Examiner	Art Unit	
	Johannes P Mondt	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for R ply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-82* is/are pending in the application.

4a) Of the above claim(s) *7-35 and 42-82* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 36-41 and 65-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *9 SDIs* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Applicant provisionally elected Species I, claims 1-6, 36-41 and 65-69 but allege that claims 1 and 36 are generic, reading on Species I-V, of which examiner has taken notice.

Information Disclosure Statement

The examiner has considered the items listed on the Information Disclosure Statements of 9/5/2, 6/28/2, 4/9/2, 3/14/2, 2/15/2, 1/24/2, 10/26/1, 8/22/1, while the single item listed on the Information Disclosure Statement of 6/22/1 has not been found in the file. Applicant is requested to provide said single item at the earliest possible time.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. ***Claim 40*** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The verbiage "likely" renders this claim indefinite.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. ***Claims 1, 36-37, 65-66*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Linke et al (6,363,097 B1) in view of Yoon et al (INSPEC Access No.: 6544626).

Linke et al teach a semiconductor (FP) (cf. col. 4, l. 4, l. 41) laser device (cf. title) comprising: an active layer (active region in Figure 3) configured to radiate light; and a diffraction grating 11 (cf. col. 4, l. 27), wherein said semiconductor laser device is capable of emitting a light beam having a plurality of longitudinal modes within a predetermined spectral width of an oscillation wavelength spectrum of the semiconductor laser, inherently so because sufficiently close the gain threshold Fabry-Perot laser devices emit a plurality of longitudinal modes.

Linke et al do not necessarily teach the limitation that said semiconductor laser device to be actually *configured* to emit said plurality of longitudinal modes. However, it would have been obvious to include said limitation in view of Yoon et al who teach the use of multi-longitudinal Fabry-Perot laser diodes in optical communication systems for the advantage of low cost (cf. abstract). Motivation to include the teaching by Yoon et al in the invention by Linke et al stems from the possibility to apply the device by Linke et al to optical communications to achieve cost advantage in an obvious application of said device. Combination of said teaching and said invention is readily achieved by applying the device in a power setting that is sufficiently moderately above threshold. Success in implementing the combination can therefore be reasonably expected.

On claim 36: mere operation of the semiconductor laser device of claim 1 meets the limitation of claim 36.

On claim 37: in view of the well-known linear relation between the length of the resonant cavity and the interval between the frequency (inversely with wavelength) in a multi-longitudinal mode laser as given in text books such as "Principles of Lasers" by Svelto et al (see Form 892), it is inevitable that the setting of the length of the resonant cavity provides the wavelength interval between said plurality of longitudinal modes.

On claim 65: said means for radiating light within said semiconductor laser device is met by said active layer in Linke et al; said means for selecting a portion of said radiated light to be emitted by said semiconductor laser device as an output light beam is met by the diffraction grating; said means for ensuring said output light beam has an oscillation wavelength spectrum with a plurality of longitudinal modes located at predetermined spectral width is met by the length of the resonant cavity.

On claim 66: the wavelength interval is automatically set by, selection of the length of the resonant cavity, as discussed above. Hence said means for ensuring comprises the means for setting said wavelength interval.

3. ***Claims 38-41, 67-69*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Linke et al and Yoon et al as applied to claim 37 above, and further in view of Goto (5,278,851). As discussed above (claim 37) resonant cavity length and wavelength interval are linearly and trivially related. With regard to claim 38, although neither Linke et al nor Yoon et al explicitly show either a specific wavelength interval between the

longitudinal modes or a resonant cavity length, Goto, in a patent on longitudinal mode solid-state lasers, i.e., analogous art, shows a wavelength interval of about 0.37 nm (cf. col. 5, l. 5 and col. 2), which meets the limitation of claim 38 and claim 67 (means for setting said interval as in claim 67 being the length of the resonant cavity). Exactly the same argument as given for the rejection of claims 3-4 apply to the rejection of claims 41 and 39, respectively: Applicant does not show in the Specification that the range as claimed either by claim 3 or claim 4 is *critical* to the invention. Applicant is reminded that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. Apart from the indefiniteness implicit in the use of the verbiage "likely" in line 2 of claim 40, the limitation of claim 40 is automatically met in view of the abovementioned linear relation between the length of the resonant cavity and the interval between the frequency (inversely with wavelength) in a multi-longitudinal mode laser as given in text books such as "Principles of Lasers" by Svelto et al (see Form 892). By the use of the Fabry-Perot etalon by Goto (cf. abstract) the spectral width of the longitudinal modes is also determined (see Figures 2 and 3); hence said means for setting the predetermined spectral width of said oscillation spectrum as in claim 68 is at least said etalon by Goto and the Fabry-Perot etalon that is part of the Fabry-Perot laser by Linke et al.

Applicant's disclosure does not teach why the range as claimed in claim 69 is critical to the invention. In view of the absence of a teaching why a range is critical to the invention Applicant is reminded that it has been held that where the general

conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

4. ***Claim 2-4*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Linke et al and Yoon et al as applied to claim 1 above, and further in view of Menna et al as provided by Applicant in the Information Disclosure Statement ("High-Power 1550 nm Distriguted Feedback Lasers with 440 mW CW Output Power for Telecommunication Applications"). Although neither Linke et al nor Yoon et al necessarily teach the further limitation as defined by claim 2 it is obvious that the directionality of the output beam 14 as taught by Linke et al (cf. col. 4, l. 12-16) can only be brought about when the vertical side of the active region on the output side reflects sufficiently little while the other vertical side of the active region reflects sufficiently. As is understood in the art and taught in Menna et al, it is common in semiconductor lasers to provide a highly reflective coating on one side and an antireflective coating on the other side of active regions to achieve directional lasing (cf. page 1). The motivation for including the teaching by Menna et al in the invention by Linke et al and Yoon et al stems from the beneficial if not necessary aspect of said highly reflective and antireflective coatings to achieve lasing with directional output. Combination of said teaching with said invention is easily achieved by provided an antireflective coating at the end of the active region near the output nozzle 14 and a highly reflective coating at the other end. Success in implementing the combination can therefore be reasonably expected. Inherently, the resonant cavity is thus defined through said highly reflective and anti-reflective coatings.

On claims 3-4: Applicant does not show in the Specification that the range as claimed either by claim 3 or claim 4 is *critical* to the invention. Applicant is reminded that

In view of the absence of a teaching why a range is critical to the invention Applicant is reminded that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Allowable Subject Matter

5. ***Claims 5-6*** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Specific teaching of the said diffraction grating to be formed substantially along the entire length of the said active layer is absent in the art found to date.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johannes P Mondt whose telephone number is 703-306-0531. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 703-308-6601. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JPM
September 22, 2003

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800